

CLAIMS

1. A process for producing a polymerelectrolyte membrane comprising the steps of:
coating a solution of a polymerelectrolyte on at least one surface of a porous substrate; and
laminating the coated porous substrate and a supporting material while applying a tension F (kg/cm) in a range of the following expression (A)

$$0.01 \leq F \leq 10 \quad (A)$$

to the coated porous substrate.

2. The producing process according to Claim 1, wherein the supporting material is laminated on a coated surface of the coated porous substrate.

3. The producing process according to Claim 1 or 2, wherein a surface of the supporting material to be laminated on the porous substrate is previously coated with the solution of a polymerelectrolyte.

4. The continuously producing process according to Claim 1, wherein a viscosity η (cps) of the solution of a polymerelectrolyte is in a range of $5 \leq \eta \leq 5000$.

5. The producing process according to Claim 1, wherein

a concentration C (wt %) of the solution of a polyelectrolyte is $1 \leq C \leq 50$.

6. A polyelectrolyte membrane obtained by the process according to Claim 1.

7. A fuel cell comprising the polyelectrolyte membrane according to Claim 6.

8. An apparatus for producing a polyelectrolyte membrane comprising:

a first coating means for coating a solution of a polyelectrolyte on a porous substrate which is conveyed, a tension applying means for applying a tension F (kg/cm) in a range satisfying the expression (A)

$$0.01 \leq F \leq 10 \quad (A)$$

to the porous substrate coated with the solution of a polyelectrolyte; and

a laminating means for laminating the porous substrate which is coated with the solution of a polyelectrolyte and applied the tension, and a supporting material.

9. The producing apparatus according to Claim 8, wherein in the first coating means, coating the solution of a polyelectrolyte on a surface of the porous substrate on which

the supporting material is to be laminated.

10. The producing apparatus according to Claim 8, further comprising a means of drying a laminate.

11. The producing apparatus according to Claim 10, comprising a second coating means for further coating the solution of a polymerelectrolyte on the porous substrate in the laminate dried by the drying means.

12. The producing apparatus according to Claim 10, comprising a second coating means of further coating the solution of a polymerelectrolyte on the porous substrate in the laminate before being dried by the drying means.